

is tegmen. This subject was made from a barb cut from a Pink-footed Goose primary with magnification of 50 times.

Plate VII. fig. 2 is an attempt to show the superficial structure of the tegmen of a Pink-footed Goose. It was made with a magnification of 500 times.

At the commencement of these notes it was stated that I was engaged on the photographic analysis of a feather. These notes on the tegmen form a portion of the whole work, which it is hoped to publish before long in complete form.

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#### XIV.—*The Birds of the Isle of May: A Migration Study.*

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##### INTRODUCTION.

THE Isle of May has long been known as a very favourable station for the observation of bird migration. It stands at the entrance of the Firth of Forth, and is separated from the land by a distance of five miles on the north and ten on the south. It is about a mile long and half a mile wide; the rocks on the west and south-west sides are very precipitous, rising to a maximum height of 180 feet above the sea; they are intersected by caves, are basaltic in formation, and of a crumbling consistency, making any attempt at cliff-climbing dangerous. On the north and east the land slopes gradually down to the water's edge, broken by inlets on the eastern side. Parts of the island were formerly cultivated, but now the greater portion is covered with rough grass interspersed with rocks: here and there, patches of thistles, nettles, and hemlock occur, and these, together with the gardens of the lightkeepers, form the only covert available for the birds which visit the island. On the west of the island the cliffs are broken by a ravine, the precipitous sides of which rise to a height of 100 feet, and in which lies a partly artificial lake; small pools are found in the shallow depressions on the grass-grown plateaux and rock-pools close to sea-level.

In old days the Isle of May was a famous place of pilgrimage: St. Adrian and his companions abode on the island in the ninth century, and the saint was slain there by the Danes about 872 A.D. Before the middle of the twelfth century David I. founded a monastery on the island and granted it to the Benedictine Abbey of Reading, on condition that it would maintain therein nine priests of their brethren, to celebrate divine service for the souls of the donor, his predecessors and successors, the Kings of Scotland. In the thirteenth century the Priory of May was sold to the Bishop of St. Andrews, and it remained under the spiritual lordship of the Priory of St. Andrews until 1606, when the lands were erected into a temporal lordship. There are many reminders of the ecclesiastical foundation: a small building on the eastern side is said to be the remains of the chapel, while the names borne by different parts of the island, such as Pilgrim Haven, Altarstanes, Holyman's Road, and others, form a link with the pilgrims of old. The island was purchased early last century by the Commissioners of Northern Lights, to whom it now belongs.

The lighthouse stands on the highest part of the island, on the western side, 240 feet above the sea: it is an electric light, and said to be 3,000,000 candle-power. Close by, on the other side of a hollow, is the old lighthouse, a square, stone, white-washed tower 40 feet high, built in 1636 by Alexander Cunningham of Barnes – the first lighthouse to be erected in Scotland. On the east side of the island, at a considerably lower altitude, stands a third lighthouse, formerly used to indicate the position of the North Carr Rocks, but now no longer in use. During our visits to the island, the only inhabitants were the lightkeepers, to whom we were indebted for many kindnesses and much assistance in our ornithological work.

It is a fortunate circumstance that the lightkeepers stationed on the Isle of May have been so often interested in observing and recording the birds which occurred there. Mr. Joseph Agnew made an excellent series of notes, from 1879 to 1886, for the British Association Reports on the

Migration of Birds. Mr. T. E. Arthur contributed good notes from 1898 to 1903 for the Report on the Movements and Occurrences of Birds in Scotland. Mr. J. McCuish from 1907 to 1909 sent notes to the Report on Scottish Ornithology, while Mr. S. Baigrie has kept a splendid series of records from 1911 onwards. Dr. Harvie Brown spent three weeks on the island in the autumn of 1884; Mr. William Evans has paid frequent short visits there, and has kindly given us the benefit of his observations; while we ourselves spent a month or six weeks there in the autumns of 1907-13 and a fortnight to a month in the springs of 1911-14, when the war put an end to ornithological expeditions.

We are very much indebted to the Commissioners of Northern Lights for so kindly giving us permission to visit the island, and we thank them very heartily for having enabled us to do so much work at this important station.

A good many of the old writers mention the birds of the Isle of May. Perhaps the most interesting of these accounts is the "Statistical Account of Scotland," published in 1792, in which it is stated that the Isle of May "is frequented by a great variety of sea-fowl, such as Kittiwakes, Scarts, Dunters, Gulls, Sea-pyets, Marrots, &c.;" while Sibbald, in his 'History of the Sheriff-doms of Fife and Kinross' (1710), says:—"Many fowls frequent the rocks of it, the names the people gave to them, are skarts, dunturs, gulls, scouts, kittiewakes; the last is so named from its cry, it is of the bigness of an ordinary pigeon, some hold it to be as savoury and as good meat as a partridge is. The scout is less than an ordinary duck and of its colour; the flesh of it is hard; it has eggs bigger than these of geese, the shells are of a green colour, with some black spots scattered here and there upon them."

Sir William Jardine in the second quarter of last century states that the following birds bred there:—Black Guillemot, Green-crested Cormorant, Sandwich, Roseate, Common, and Arctic Terns. Several species of birds which used to breed on the island now no longer do so; for instance, these four species of Terns and the Black Guillemot do not now nest

there, while the Peregrine, which formerly bred on the cliffs, now only visits the island in pursuit of prey. Writing in 1886, Dr. Harvie Brown includes in his list of breeding-birds the Song-Thrush, Wheatear (about 50 pairs), Linnet (a few pairs), Hedge-Sparrow (one pair in 1884 for the first time), and Cormorant, none of which now nests there. All that we have found breeding are the Starling, Pied Wagtail, Meadow-Pipit, Rock-Pipit, Blackbird, Eider, Shag, Oystercatcher, Redshank (one year only), Herring-Gull, Kittiwake, Razor-bill, Guillemot, and Puffin. It is difficult to find a reason for many of the changes which have taken place, the island affording many apparently suitable breeding-places.

#### MIGRATION ON THE ISLE OF MAY.

We have notes from the Isle of May of the arrival and departure of summer visitors, winter visitors, partial migrants, passage migrants, occasional visitors (viz. birds which visit us under certain weather conditions only, such as Yellow-browed Warblers and Little Buntings), and rare stragglers (that is, birds that have lost their way and of which only one or two occurrences have been recorded, as the Indian Stonechat and Pied Wheatear); also of weather movements and movements of cliff- and sea-birds. It must be remembered that on an island, owing to its limited size and lack of covert, a much larger proportion of the birds present can be seen and identified than is possible on the mainland. Also that it is much easier to ascertain when a bird arrives than on a larger space: for instance, if a Barred Warbler be beaten out of covert one morning, there can be but little doubt that it has arrived since the previous day; should a bird of the same species appear on the mainland, it is next to impossible, owing to the amount of covert, to say whether or no it had been there for some time previously.

Weather conditions have a great influence on the movements of birds: the main facts are not in dispute; but when we come to the more subtle effects of wind and weather, opinions differ as to the extent and direction of their influences. We find on the Isle of May that the weather in

which rushes of birds come to the island, and uncommon visitors appear, is during easterly or south-easterly winds, usually with cloud, haze, fog, or rain. An extensive anti-cyclonic area, with light east to south wind and fair weather, brings numbers of birds, and is by far the most satisfactory from our point of view, because working is agreeable and one can be sure of determining a much larger proportion of the arrivals than is the case in bad weather. A falling barometer, with strong east winds and heavy rain, does not, however, stop the birds; we have seen large numbers arrive under such conditions, when wind and rain made working very difficult. In northerly and westerly winds comparatively few birds are seen, and these are almost entirely our own summer or winter visitors; the enormous rushes of passage migrants do not occur and uncommon visitors are few and far between. At the same time, we are not sure that this is not the weather most favourable for the birds, although not for the observer. The direction of the wind does not prevent birds migrating—they move when the wind is at every point of the compass,—but although this is so, in our opinion the direction of the wind has a great influence on the route followed and therefore on the species which occur on our shores. From evidence gathered on the Isle of May and from data which we have studied, extending over a long period of years, in this country and elsewhere, we are convinced that alternative routes are followed, according to wind influences, though it is difficult to say whether drift is wholly responsible for the deviation from the direct route or whether this is to some extent undertaken voluntarily. For instance, in the case of birds going from their summer home in northern Europe to their winter quarters in northern Africa, if an easterly type of weather prevail *during their migration period*, we find that they strike our east coasts in enormous numbers, and many species are seen which do not visit us under any other weather conditions. On the other hand, should the prevailing type be westerly, these migrants do not strike the British Isles at all, and we believe that they proceed to their winter quarters along a more easterly

route. This question of alternative routes is a difficult matter to prove beyond a doubt, but there is a good deal of evidence which seems to us strongly in support of our theory. This we will detail as briefly as possible, dealing with autumn movements for the sake of convenience, though it must be understood that the same remarks apply to the spring migrations.

*Firstly.* There is the fact that, should a westerly type of weather prevail during the whole migration-period of any given species, such as Bluethroats, Barred and Yellow-browed Warblers, Scarlet Grosbeaks, Northern and Siberian Chiffchaffs, and many others, these birds will not be seen at our migration-stations. Should, however, the wind change to an opposite direction during the period of their migration, these species will at once make their appearance on our shores, travelling, no doubt, along that "bridge of fine weather" which Dr. Eagle Clarke, in his "Studies of Bird Migration," has shown to exist between the Continent and Great Britain under these meteorological conditions. Should the easterly type of weather not extend far enough to the east of our islands, the Asiatic species will not appear, although we may be visited by birds from northern and central Europe. In the autumn of 1912, late in September, we had easterly and south-easterly winds and a large rush of birds, including Little Buntings, Red-breasted Flycatchers, and Barred Warblers; in view of our former experiences we expected Yellow-browed Warblers, but none came under observation. On studying the meteorological conditions we found that, previous to and during that time, the weather conditions favourable for bringing this species to our shores did not extend sufficiently far east to influence its movements.

*Secondly.* If the easterly type of weather comes late in the season, an entirely different class of birds to those we get earlier in the year comes with it, thus proving, in our opinion, that the birds do not wait for this type of weather to perform their migration journey, but proceed to their winter quarters

by another route should westerly winds prevail during their normal migration-period.

*Thirdly.* Species which breed in the far north of both hemispheres, such as Lapland Buntings and Shore-Larks, appear in both easterly and westerly winds.

*Fourthly.* Observations made on the flight of Homing Pigeons also go to prove this point: for instance, a pigeon-fancier in Kirkealdy (Fife) told us that when Pigeons were flown from North Berwick to Kirkealdy, the route taken by the birds varied according to the wind which was blowing at the time. On a perfectly calm day, he had ascertained from observation that the Pigeons flew straight from one spot to the other. If the wind were westerly the birds crossed pretty straight over the Firth to the side opposite North Berwick, and then approached Kirkealdy from the east along the north side of the estuary. If, on the other hand, the wind were easterly, the Pigeons hugged the south side of the Firth and crossed over much farther up, sometimes as high as Aberdour, thus actually approaching Kirkealdy from the west side. The distance from North Berwick to Kirkealdy is infinitesimal compared with that traversed by birds during their migration-flights, and if the divergence caused by the varying winds be so great in so small a distance, it is a fair assumption that on a flight of hundreds of miles it will assume very considerable proportions indeed. We have had corroborative evidence from others who fly Homing Pigeons.

*Fifthly.* If easterly winds continue over a considerable period birds keep coming in, but the migrants tend to remain on the island and do not pass on until the wind changes to the west, when the island is swept bare almost in a single night. This appears to us to show that the easterly wind is not favourable to the birds' southern journey, but has drifted them across the North Sea, many miles out of their direct route, which they will find it difficult to regain until the wind changes.

*Sixthly.* In westerly winds rushes of birds visit the Liuchiu Islands, off the east coast of Asia.

*Seventhly.* In an interesting article in 'Nature,' 26 July, 1917, by W. H. Dines, he shows the effect of wind on the drift of an aeroplane. He states: "The pilot, therefore, if the earth is hidden from him by a sheet of clouds, is absolutely and entirely ignorant of the strength and direction of the wind in which he is flying; it is just the same to him if it be a dead calm or if it be blowing at the rate of a hundred miles an hour from the east or from the west; he is, indeed, as unconscious of the motion which he is sharing with the air as he is of his daily revolution at a rate in these latitudes of some 600 miles an hour round the axis of the earth. But the effect upon the drift of his machine may be very considerable, and as he does not know what it is he cannot allow for it. . . . Thus Glasgow lies very close to a point 400 miles due north of Plymouth, and an aeroplane leaving Plymouth and flying due north at 80 miles an hour would find herself close to Glasgow in five hours' time. Should, however, a strong west wind be blowing of which the pilot did not know, and also clouds so that he could not see the earth, he would, if steering by compass, find himself in five hours' time over the North Sea, and quite possibly much nearer to the Danish than to the English coast. In the present state of our knowledge he could obtain information at starting of the general direction and strength of the wind, but not in such detail that he could hit off Glasgow within 100 or 200 miles." Easterly winds with low clouds, haze or fog is exactly the type of weather in which big rushes of birds occur on our coasts, and we think it a fair deduction that they, like the aeroplane pilot, have been drifted from their direct route.

*Eighthly.* In an autumn such as this (1917), in which persistent westerly winds prevail, not only do the large movements of passage migrants through Scotland not occur, but the numbers of winter visitors are enormously below the average, Fieldfares, Redwings, Bramblings, &c., being conspicuous by their absence. Dr. Eagle Clarke kindly informs us that in 1887, when similar weather conditions prevailed, winter visitors were equally scarce.



In view of the above evidence, we hold that there are strong grounds for believing that the route followed by birds on migration depends largely on the direction of the wind. It would appear that a bird's *most* fixed point is its breeding-place, and that its migration routes, and even its winter quarters, greatly depend on weather conditions during its periods of movement. We wish to reiterate that we do not consider that the *direction* of the wind, apart from its *force*, stops birds migrating, but merely determines the route taken on their long journeys. We believe that the deviation from the direct route is largely, perhaps mainly, due to drift, though voluntary "tacking" may be a factor. It seems impossible that it can be any advantage to a European or Asiatic bird breeding far north to make its journey southwards to its winter quarters hundreds of miles longer by proceeding via the British Isles, as many of them do under easterly weather conditions. We must remember that the best "migration-weather" for observers is probably the worst for the birds, and when ideal conditions prevail for them we see little or nothing of their migration-flights.

On their migration journeys birds run the gauntlet of many perils; foremost among these are adverse weather conditions. We have found Fieldfares and Blackbirds washed up by the sea, having evidently become exhausted by the struggle against wind and weather, and having fallen into the water and been drowned. We have also often seen birds alight on the May in a thoroughly exhausted condition, too tired even to flutter a few yards farther, and after such an arrival as this, we have picked up next morning many corpses of migrants, evidently killed by exhaustion, probably aided by starvation. This last is another peril which besets the path of birds on migration. In the autumn of 1913 this was brought home to us very forcibly. There were a great many birds on the island, and of these many Redwings, Thrushes, and Goldcrests literally starved before our eyes. Day after day we saw them getting weaker and weaker, till at last we picked up many dead. We felt sure that starvation was the cause of death but, wishing to have

our diagnosis confirmed, we sent some to Professor Sutherland of University College, Dundee, who kindly examined them for us and told us that our impression was correct. There had been a long drought, the island was parched and the grass dried up; this probably caused a shortage of their usual food supply, which on the Isle of May appears largely to be a small beetle found among the grass.

We now come to the depredations of the birds of prey. Merlins, Kestrels, and Short-eared Owls come with the flocks and harry them. Peregrines, too, slay many of the migrants—we have seen them hunting or eating all sizes of birds, from a Wood-Pigeon to a Goldcrest. We have seen Short-eared Owls chasing the birds that were circling in the rays of the lantern: that their hunts were all too successful was proved by the discovery of small heaps of dead birds in tufts of grass on the north plateau, where these Owls were living. Often these birds were minus the primaries of one or both wings, and sometimes the rectrices had been plucked out too. Thrushes seemed to be their chief fare, but we also found the remains of Redwings, Chaffinches, Spotted Flycatchers, Meadow-Pipits, Skylarks, Wheatears, a Bunting (probably a Reed), Goldcrests, a Turnstone, and Common Terns. There seemed to be regular larders, where the birds were kept till the Owls were ready to eat them.

Under certain weather conditions the lantern is a very great danger; given a night of fine rain or haze, preferably with a south-east wind, the light proves a fatal attraction and hundreds of birds are lured to their doom. We have stood on the balcony and watched the birds dash themselves at great speed against the glass and fall dead at our feet, often with the whole of one side cut as cleanly open as if it had been done with a knife. After a "lantern night" many disabled birds might be seen on the island next day, but what struck us most about these was the wonderful way in which they recovered from their injuries. One Wheatear, in particular, interested us greatly: it had a very badly smashed wing and we were doubtful of its recovery, but day

by day it improved till it was able to take short flights; these gradually became longer till one day it had left us and, we will hope, arrived safely at its winter quarters.

We were surprised to find how many of the migrants, in spring, sang while resting on the island. We have heard many Willow-Warblers, Sedge-Warblers, Whitethroats, Skylarks, Whinchats, Wheatears, and Greater Wheatears, singing vigorously. A fine male Reed-Bunting woke us one morning by singing just outside our window, and early on the 9th of May, 1911, we heard the unmistakable song of the Nightingale, while the dissyllabic note of the Cuckoo is often heard all over the island. The number of birds attracted to the lantern in spring is usually very much less than that of the autumn movements, but the charm of these spring rushes is greatly enhanced by the fact that the birds often come fluttering up the rays of light singing as they come. One May morning we stood on the balcony of the lighthouse from midnight to 3 A.M. watching a big rush of Willow-Warblers, Whinchats, Wheatears, and other migrants. There was a light south-east wind and small rain, and though many birds were attracted by the light they did not dash themselves against the glass, but merely fluttered singing up to the lantern and remained gazing in, fascinated by its powerful rays. After an arrival of migrants in spring, quite a large number of Warblers might be heard in song at the same time, answering each other from the walls round the fields, from the fences and bushes in the gardens, from thistle top and hemlock spray.

We have no intention of attempting to describe a rush, for the all-sufficient reason that it is indescribable; there are, however, certain differences between spring and autumn rushes which we would like to mention. In spring the birds seem more hurried than in autumn, not lingering on the island but hastening on, urged apparently by a stronger impulse than that which impels them in autumn. The magnitude of the autumn rushes, in our experience, exceeds that of those in spring, and the period of the spring passage

of most species tends to be shorter than that in autumn. There are, too, certain species of birds which very rarely, or never occur in spring but which are not very uncommon in autumn. The brilliancy of plumage of birds in spring makes identification much easier, and their less skulking habits at that season, as well as the smaller amount of covert on the island, tend to reduce the number which escape notice.

We have examined many birds killed at the lantern, both in spring and autumn, and have never found any food in their crops or stomachs, though occasionally one or two particles of grit were present.

The following is a list of all the birds known to have occurred on the island, with their status there; they number 178. We have added our field-notes, and it must be understood that these are made from our own observations on the island and refer to the birds' behaviour there. One asterisk before the name of the bird indicates that it was new to the Forth list, two that it was new to Scotland, and three that it had not before been recorded for Britain.

#### LIST OF SPECIES.

*Corvus corone corone.* THE CARRION-CROW. Occurs on passage in both spring and autumn, more commonly at the former season. In spring it has been recorded throughout March and April and up to 18 May, and in autumn from 26 September to 16 November. An occasional straggler appears in winter.

*Corvus cornix cornix.* THE HOODED CROW. A bird of double passage, more common in autumn than in spring; considerable numbers sometimes appear in easterly winds. In spring, passage takes place in March and April and occasionally, in small numbers, throughout May, while single birds have been recorded on 2 & 9 June and 5 July. In autumn, passage begins in the end of September and continues till mid-November; single birds sometimes visit the island in winter, and a number appeared there on 6 January, 1917.

*Corvus monedula monedula.* THE JACKDAW. Occurs irregularly in spring and autumn, occasionally in some numbers at the former season.

*Corvus frugilegus frugilegus.* THE ROOK. An irregular visitor in spring and autumn; most common in spring, occasionally occurring in large numbers in March.

*Sturnus vulgaris vulgaris.* THE STARLING. Breeds on the island in some numbers. Also a bird of double passage; in spring the regular movements take place from mid-February to mid-April, but we have seen numbers on passage as late as 14 May. The earlier birds are probably Scottish breeding-birds returning to their nesting-quarters; the later, passage migrants along our shores. Enormous numbers visit the island in autumn; small arrivals take place during the second half of September, but October and the first half of November are the times of maximum movement. It is difficult definitely to separate the departures of our own birds from the movements of Starlings from overseas, but it is safe to say that the large majority of these October and November migrants consists of birds from the continent of Europe. A few spend the winter on the island. Starlings are strongly attracted by light; we have seen them sitting thickly crowded on the hand-rail, on the balcony, and on the edge of the dome; at such times several usually manage to find their way into the light-room. They can strike the lantern harder than any bird we know without killing themselves, being very different in this respect from the Sky-Lark, which pays heavy toll on every migration night.

*Oriolus oriolus oriolus.* THE GOLDEN ORIOLE. The only record for the island is of one seen on 13 September, 1913, in strong north-east wind and heavy rain.

*Chloris chloris chloris.* THE GREENFINCH. Occurs on passage during April and up to mid-May. On 6 May, 1912, we watched small flocks passing over the island all day up to 3 P.M.; they came from the south-east and went

over to the north-west. They flew quite low, with the steady yet fluttering flight so characteristic of small birds on a long journey. Autumn passage takes place chiefly in October and November, though Greenfinches are occasionally seen as early as September, but no large flocks are ever recorded. This species frequently visits the island in winter, always in small numbers.

*Spinus spinus*. THE SISKIN. The spring records for the Isle of May are: three on 25 March, 1909, a male on 13 May, 1911, and another on 13 May, 1913. Large flocks frequently occur in autumn; passage at this season takes place between 22 September and mid-November. The only winter record is of a flock of about half-a-dozen on 1 January, 1883.

*Passer domesticus domesticus*. THE HOUSE-SPARROW. Between 1881 and 1885 there are scattered records of from one to a few House-Sparrows on the island in February, March, May, November, and December. The first autumn we were there (1907) we saw a few throughout our stay, and Mr. Ross, then chief engineer on the island, told us that they had bred that year—the first time to his knowledge. After this they seem to have vanished from the island, our only other record being of a male, found dead on 23 May, 1911; it had been dead for a considerable time.

*Passer montanus montanus*. THE TREE-SPARROW. Resident, several pairs breeding on the island. Also a passage migrant, much less numerous in spring (April–May) than in autumn (October and first week of November). The immigrants we have seen were always in much finer plumage than the local birds.

*Fringilla cœlebs cœlebs*. THE CHAFFINCH. A bird of double passage, very large flocks occurring in autumn, lesser numbers in spring; both sexes are represented.

*Fringilla montifringilla*. THE BRAMBLING. Passage migrant and occasional winter visitor. Spring passage

takes place chiefly in April, though one or two birds are recorded from 19 March to 18 May. In autumn very large flocks visit the island: the earliest noted is on 17 September, the latest 17 November, but October is the month in which the main arrivals take place. We have often seen day-time movements of this species: on 10 October, 1909 (south wind, light) flock after flock came in from the north-east all morning, till by midday there were numbers on every part of the island; by afternoon the flocks were enormous—there must have been thousands present. On 7 October, 1910, a good many Bramblings arrived from the east during the day (W., light, haze), and we heard and saw many other flocks flying over us, going west.

*Acanthis cannabina cannabina*. THE LINNET. Formerly a few pairs bred on the island; now, however, it only occurs on passage in small numbers. One appeared on 11 March, 1908, and there are a few scattered records in May, while in autumn small numbers are reported between 19 September and 8 November.

*Acanthis linaria linaria*. THE MEALY REDPOLL. An irregular passage migrant and winter visitor. It has been recorded in spring in small numbers between 12 March and 20 May, and in autumn (sometimes very plentifully) between 21 September and 12 November; large immigrations occurred in the autumns of 1910 and 1913. Under the date 8 February, 1886, Mr. Agnew writes: "For some weeks the island has been visited by a considerable number of Redpolls, and numbers of them died, I suppose from the extreme cold."

\**Acanthis linaria holboelli*. HOLBÖLL'S REDPOLL. A bird of this subspecies was procured on 23 October, 1910, and sent to us.

\**Pyrrhula pyrrhula pyrrhula*. THE NORTHERN BULLFINCH. The Isle of May participated in the large immigration of Northern Bullfinches which took place in Scotland in the autumn of 1910; several visited the island in the latter half

of October, both sexes being present. A Bullfinch reported by Mr. Agnew on 12 April, 1881, in light south-easterly winds *may* have belonged to this race.

\**Carpodacus erythrinus erythrinus*. THE SCARLET GROSBEEK. Single birds, always in the greeny plumage (*i. e.*, females or young males), occurred on 25 September 1907, 12 September 1908, 13 September 1909, 7 September 1910, 8 and 20 September 1913. They chiefly frequented the potato patches in the gardens, and uttered a curious soft dissyllabic note; on one occasion we saw one eat a moth. The Grosbeak procured in 1907 was the second record for Scotland.

*Emberiza calandra calandra*. THE CORN-BUNTING. We have only once seen this bird on the island, *viz.* on 30 May, 1912, but Mr. Agnew records it in January, February, March, April, June, October, and December, and Mr. Baigrie in April, 1913. Never more than two birds have been seen at the same time, and the visits have been paid at long intervals.

*Emberiza citrinella citrinella*. THE YELLOW BUNTING. This species never occurs in any numbers on the island. It is a passage migrant in very small numbers and an occasional winter visitor. The spring movement is most pronounced in April, the autumn in October and the first half of November.

\**Emberiza hortulana*. THE ORTOLAN BUNTING. An occasional visitor to the May. The records are: one shot 2 May 1885, several seen next day and two on 28 May 1885, one 20 September 1910, and three on 16 October of the same year. They frequented little patches of oat-stubbles in the gardens and were very wild.

\**Emberiza pusilla*. THE LITTLE BUNTING. An occasional visitor in autumn under suitable weather conditions. The records are: one on 25 & 26 September 1909, three on 28 and one on 29 September 1912, and one on 8 October



1913—all with easterly and south-easterly winds. They are confiding little birds; we heard them utter a soft single note and also a gentle twittering song.

*Emberiza schœniclus schœniclus.* THE REED-BUNTING. A bird of double passage, occurring regularly in May and again from 24 September to mid-October.

\**Calcarius lapponicus lapponicus.* THE LAPLAND BUNTING. An occasional visitor in autumn. The records are: single birds on 1 October 1907 (S.E., light to fresh, fog), 28 September 1911 (W., strong), 12 October 1911 (E.), and 24 September 1913 (S.S.E., light). The direction of the wind is interesting and suggestive if we consider the range of the species. This Bunting has a loud and peculiar note, which it usually utters when flushed.

*Plectrophenax nivalis.* THE SNOW-BUNTING. A common passage migrant and winter visitor. The period of movement in spring is March and the first half of April, in autumn the second half of September, October and November, the last month being the time the Snow-Bunting appears in the largest numbers. Comparatively few strike the lantern.

*Alauda arvensis arvensis.* THE SKY-LARK. It is impossible from data collected at one station only, to disentangle satisfactorily the very complicated movements of this species. It does not breed on the island, but is certainly a bird of double passage there and a common winter visitor under stress of weather on the mainland. It is recorded steadily on migration from February to May; the earlier dates probably refer to the return of our breeding-birds, the later to winter visitors and passage migrants going overseas to their continental breeding-grounds. In autumn, movement occurs continuously from mid-September to mid-November. It would seem probable that the earlier are our home-bred birds leaving, the later the arrival of winter visitors and passage migrants. Sky-Larks are peculiarly susceptible to light and visit the lantern in large numbers, many being killed.

\**Lullula arborea arborea*. THE WOOD-LARK. An occasional visitor to the island. The records are: one on 16 & 17 October 1910, and one on 29 September 1912, both with south-easterly winds

*Otocorys alpestris alpestris*. THE SHORE-LARK. An occasional visitor in autumn. One was killed at the lantern on 11 October, 1907 (S.E., very light) and sent to us, two were seen on 13 October, 1909, and one on 14 & 16 (S.W. & W., fresh to strong) and four on 9 October, 1913 (E. & N.E., moderate). It will be noticed that this species has occurred in both types of weather, it, like the Lapland Bunting, having a circumpolar distribution. Shore-Larks have a sweet wild note, "hi-yi-yi," which they utter constantly when flushed; we often watched them settle half-way up a rock, run to the top, elevate their "horns," stretch their necks, and look around them.

*Motacilla alba alba*. THE WHITE WAGTAIL. A bird of double passage, having been recorded in spring between 23 April and 29 May and in autumn between 11 August and 2 October, always in small numbers. It has several times been taken at the lantern.

*Motacilla alba lugubris*. THE PIED WAGTAIL. A summer visitor to the island, where three or four pairs nest; the breeding-birds arrive at the end of February or early in March, leaving again early in October. It is also a bird of double passage, movement of this description being noted in April and September. There is only one winter record, a Pied Wagtail being on the island from 24 December, 1885, to 12 January, 1886.

*Motacilla cinerea cinerea* (= *M. boarula* auct.). THE GREY WAGTAIL. There are only two spring records, viz., on 25 March, 1909, and 28 May, 1911, and several in autumn between 8 September and 2 October.

*Motacilla raii*. THE YELLOW WAGTAIL. The only definite records of Yellow Wagtails are single birds on 17 May, 1911,

when a beautiful male was seen in Holyman's Road, 10, 13, & 14 May, 1913, 28 September, 1915, and 11 & 19 May, 1917.

*Motacilla flava flava*. THE BLUE-HEADED WAGTAIL. The only record for the island is of one seen by us on 13 & 14 May, 1913. It came with a large rush of birds and frequented a pool on one of the plateaux.

\**Motacilla flava thunbergi*. THE GREY-HEADED WAGTAIL. An uncommon visitor to the island. Single birds occurred on 16 May, 1913, and 20 May, 1914. When on the wing this bird frequently uttered its loud and distinctive note.

*Anthus trivialis trivialis*. THE TREE-PIPIT. A bird of double passage, recorded in spring throughout May and in autumn in September and the first half of October.

*Anthus pratensis*. THE MEADOW-PIPIT. A summer visitor, some pairs breeding on the island; these appear to arrive in March and to leave again in August and September. Large passage movements also take place; these continue through April and the first half of May, and occasionally even up to the end of the month. In autumn, passage is in progress in September and October, and there are two records of the species in November.

*Anthus petrosus petrosus*. THE ROCK-PIPIT. Resident, a good many breeding on the island, while some stay throughout the winter. Passage in spring and autumn also takes place; at the former season in May, at the latter during the second half of September and the first week of October. Although we were on the look-out for the Scandinavian form *A. p. littoralis* among these migrants, we never succeeded in distinguishing it.

*Regulus regulus regulus*. THE GOLDCREST. A bird of double passage, occurring in much larger numbers in autumn than in spring. It has occurred fairly frequently in March, but April is the time of maximum passage, and

there are but few records for May. Continuous movement takes place in autumn from early September to the end of October and sometimes into November: to begin with, the numbers are small, and these are doubtless our own birds leaving us; later, with easterly and south-easterly winds, enormous rushes of continental immigrants take place. On these occasions the numbers are indescribable, and Goldcrests are to be seen everywhere—among the rocks, on the cliff-faces, all over the plateaux, in the gardens, and on the buildings. They are quite fearless, far the tamest of any of the migrants; we have frequently picked them up when they were creeping about over the rocks or among the nettles. They are strongly attracted by light, and many fall victims to its fatal fascination. There is but one winter record for the island—*i. e.*, a Goldcrest at the lantern on the morning of 18 December, 1913.

**\*\*Parus major major.** THE CONTINENTAL GREAT TITMOUSE. A bird of this race occurred on 15 October, 1910.

**Parus ater britannicus.** THE BRITISH COLE TITMOUSE. The only record for the island is of one which appeared on 1 October, 1908, in one of the gardens.

**Parus cæruleus obscurus.** THE BRITISH BLUE TITMOUSE. One arrived on 30 September, 1908. A Blue Titmouse (subsp. ?) is recorded on 9 October, 1884.

**Ægithalus caudatus roseus.** THE BRITISH LONG-TAILED TITMOUSE. A party of six frequented the rocks at the south end of the island on 26 & 27 October, 1913.

**Lanius excubitor excubitor.** THE GREAT GREY SHRIKE. Occasionally visits the island; single birds are recorded on 16 October 1882, 25 October 1908, and 1 November 1914.

**Lanius collurio collurio.** THE RED-BACKED SHRIKE. This Shrike occurs not infrequently in May, in ones or twos. A Shrike which was procured on 27 September, 1907, and

pronounced by Dr. Hartert to be an abnormally coloured young bird of this species, differs so widely from the ordinary plumage, that, in spite of the high authority on which it is named, we are still doubtful of its specific identity. In this singular specimen the head and mantle are plain dark greyish brown; the lower back, scapulars, and upper tail-coverts a little paler and with dark vermiculations; the tail, which is decidedly long (3.25 inches), is crossed at an inch from its tip by a bar of reddish brown. The under surface is plain white, with a few dark bars on the sides of the fore-neck and breast and on the flanks.

\*\**Lanius senator senator*. THE WOODCHAT SHRIKE. A Woodchat Shrike was killed at the lantern at 2 A.M. on 19 October, 1911; it was a young bird, mainly in the plumage described by Dr. Hartert as the "nest-kleid."

*Sylvia communis communis*. THE WHITETHROAT. A bird of double passage, occurring in spring from the latter end of April, throughout May, and occasionally in early June; the latter birds being probably passage migrants on their way to breed overseas. In autumn, passage usually begins about mid-August, though a few Whitethroats were on the island on 27 July, 1885: these early records probably refer to the departure of our home-bred birds. The later movements, which take place in September and the first week of October, vary enormously in magnitude; some autumns great numbers visit the island, in other years only one or two are seen. These Whitethroats are probably continental bred birds, and the weather conditions prevailing during their migration periods decide whether or not they strike the British coasts during their southward journey. We have often noticed on the island that these birds took covert far down rabbit-holes or in crevices under rocks.

*Sylvia curruca curruca*. THE LESSER WHITETHROAT. A bird of double passage under suitable weather conditions, occurring in spring between 4 & 20 May and in autumn

between 27 August and 12 October. Lesser Whitethroats always occurred in small numbers and were very tame, often almost allowing us to touch them.

*Sylvia simplex*. THE GARDEN-WARBLER. A passage migrant in small numbers, being recorded in spring throughout May and in autumn between 12 September and 17 October, though early migrants reached the island on 5 August, 1909, and 11 August, 1910.

*Sylvia atricapilla atricapilla*. THE BLACKCAP. A passage migrant in small numbers, more plentiful in autumn than in spring. Spring passage has been noted between 3 & 26 May and autumn movement between 10 September and the end of October, while a male was killed at the lantern on 5 November, 1907, and a male and female on 15 November, 1911.

\**Sylvia nisoria nisoria*. THE BARRED WARBLER. An occasional visitor in autumn. The records are: 24 September 1907, 13 September 1909, 10 September 1911, and 12, 13, & 28 September 1912—all single birds except 12 September 1912, when two appeared. The flight of this Warbler is heavy; it is very lethargic and fond of taking covert; its habits are skulking, and it will return again and again to the spot whence it is first flushed. What strikes one principally is the large size of its feet, which look disproportionately big when seen perching and even when flying. It must be understood that these, and the other notes on habits, refer only to birds on migration, and are our own personal observation.

*Locustella naevia naevia*. THE GRASSHOPPER-WARBLER. The only records are of single birds on 21 September 1908 and 14 May 1913.

*Acrocephalus schœnobæus*. THE SEDGE-WARBLER. A bird of double passage, occurring in spring between 29 April and 27 May and in autumn between 10 August and 1 October. It is rather strongly attracted by light.

\*\**Hypolais polyglotta*. THE MELODIOUS WARBLER. A very rare visitor, the only record being of an adult female on 27 September, 1913.

*Phylloscopus trochilus trochilus*. THE WILLOW-WARBLER. A passage migrant in large numbers from 20 April throughout May and even, in 1914, on 10 & 11 June; probably the earlier are our Scottish breeding-birds arriving, while the later are on their way overseas. A considerable movement takes place in August, sometimes beginning as early as the 5th, these being probably departures of home-bred birds. This is supplemented throughout September by passage migration, which occasionally lasts even up to 18 October. This bird is strongly attracted by light.

\*\**Phylloscopus trochilus eversmanni*. THE NORTHERN WILLOW - WARBLER. This long-winged race has been obtained twice—at the lantern on 10 May, 1909, and on 6 October, 1911. It doubtless occurs more commonly, but, being difficult to distinguish from the typical form, is overlooked.

*Phylloscopus sibilatrix sibilatrix*. THE WOOD-WARBLER. The only authenticated records for the island are on 3/4 May 1914, when one was killed at the lantern, 8 August 1915, and 26 August 1917.

*Phylloscopus collybita collybita*. THE CHIFFCHAFF. Occurs occasionally in spring and autumn. In spring the records are on 17 April 1909, 12 May 1913, and 8 May 1917; in autumn there is one record in August, two in September, and a good many in October. In the autumns of 1912 and 1913 a good many of this and the following subspecies appeared on the island; otherwise the records are but isolated ones.

\**Phylloscopus collybita abietinus*. THE SCANDINAVIAN CHIFFCHAFF. There are several records of this race in the autumn of 1912 and 1913 and two in that of 1914; the dates range from 30 September to 3 November.

\**Phylloscopus collybita tristis*. THE SIBERIAN CHIFFCHAFF. The only specimen recorded was procured on 16 October, 1910.

\**Phylloscopus humei præmium* †. THE YELLOW-BROWED WARBLER. Given an easterly type of weather at its migration period, sufficiently wide-spread to extend to its Asiatic haunts, this little Warbler may be expected to visit our shores in autumn. We have seen it on the May in the autumns of 1907, 1908, 1909, & 1913, between 16 September and 24 October, sometimes two or three on the same day. Yellow-browed Warblers are very restless little birds, always on the move, flitting from place to place at lightning speed. They have a loud clear note—a ringing “pēē,” that may be heard at a considerable distance. It would be interesting to know whether the Yellow-browed Warblers that penetrate to this country ever regain their regular wintering place.

*Turdus viscivorus viscivorus*. THE MISSEL-THRUSH. Occurs in small numbers on double passage. In spring, movement is recorded in February, March, and April, with stragglers into May; the earlier of these probably refer to returns of our own breeding-birds, the later to migrants going overseas. Exceptionally early returns are noted in July and August, but the period of normal autumn migration is the latter half of September and October, and single birds were at the lantern on 16 November, 1900, and 12 November, 1913.

\*\**Turdus musicus musicus*. THE CONTINENTAL SONG-THRUSH. An autumn passage migrant, and probably also occurring in spring. We have specimens of this bird taken in rushes at the end of September and in October, and no doubt the large immigrations that take place in late October and early November belong to the typical form. Large movements of Thrushes take place in February and March; Continental birds are probably present in these, but of this there is, as yet, no proof. On several occasions we have seen one to three Thrushes in May, these were always very wild and unapproachable, and the fugitive glimpses which we had of

† *Vide supra*, p. 238.



them did not enable us to determine the subspecies. We have seen enormous rushes of this bird in October; sometimes the island is covered with them, their characteristic note resounding on every side. In comparison with the British birds, which are often on the island at the same time, the Continental Thrush in the field looks darker and slighter, and is much less confiding.

*Turdus musicus clarkii.* THE BRITISH SONG-THRUSH. Thrushes, doubtless this subspecies, used to breed on the island, but now no longer do so. Passage migrant: some of the large numbers occurring in February and March are without doubt our Scottish birds returning to their breeding-places, and very large numbers of this race visit the island in autumn. The main autumn movement takes place in September and October, but early arrivals are noted in August, and those killed at the lantern during this month and sent to us have always been our home-bred birds. Thrushes (subsp.?) occasionally visit the island in winter. In the main, Thrushes travel by night, though daylight movement also takes place; we have seen flocks arrive on the island by day, plunging down from a great height, uttering a peculiar shrill note as they come, alighting on the island and immediately taking covert. When leaving for a long flight, they rise perpendicularly into the air, until invisible not only to the naked eye but also to field-glasses.

*Turdus iliacus.* THE REDWING. A bird of double passage, much commoner in autumn than in spring, and occasionally a winter visitor. The period of maximum movement in spring is March and April, though Redwings sometimes appear as early as February and as late as 25 May. In autumn arrivals occur between 20 September and mid-November. We have seen great daylight movements of this species, though Redwings usually travel by night; for instance, on 10 October, 1909, they were arriving from the north-east all day, and on 16 October, 1910, great numbers kept coming in from the north. All Thrushes are strongly attracted by the lantern; this species, Song-Thrushes, and Fieldfares are

sometimes killed in hundreds, and even when the light is not very attractive, the "zip zip" of the Thrush and the "zieh" of the Redwing may be heard on many a night as they fly round in the rays.

*Turdus pilaris*. THE FIELDFARE. A bird of double passage and a frequent visitor in winter; the regular migration begins in March, but April and May are the periods of maximum movement. There are two June records—on 2 June 1911, and 6 June 1915. Autumn migration has been noted as early as 25 September, but the main arrival takes place between mid-October and mid-November. Fieldfares also sometimes move by day; on 24 October, 1913, a pronounced movement of this kind took place and many Fieldfares passed, up till mid-day, making their way with some difficulty against a heavy west wind; occasionally they alighted on the island for a few moments, but soon went on. The flocks varied in size from nine to about thirty.

*Turdus merula merula*. THE BLACKBIRD. Resident, breeding freely on the island; also a bird of double passage—in spring in March and April, in autumn in October and the first half of November. From 14 to 17 October, 1910, a large immigration of Blackbirds took place; we saw many at the lantern and on the island, almost all being young males with black bills.

*Turdus torquatus torquatus*. THE RING-OUZEL. A bird of double passage, from mid-April to mid-May, and again throughout September and October, and even up to 22 November.

*Phœnicurus phœnicurus phœnicurus*. THE REDSTART. A bird of double passage, from mid-April throughout May and even into June; these later birds were doubtless passage migrants on their way overseas. Single birds are recorded on 29 June, 1882, and 13 July, 1914, but regular movement does not begin till the last week of August, and lasts till the

first week of October, though stragglers are recorded up to the end of the month. Redstarts sometimes visit the island in very large numbers.

*Phœnicurus titys*. THE BLACK REDSTART. A bird of this species was shot by Mr. Agnew on 24 October, 1884. Since then Black Redstarts have occurred on a good many occasions in April, May, October, and November. They occur in ones and twos, and those we have seen have always been very wild and unapproachable.

\*\**Erithacus rubecula rubecula*. THE CONTINENTAL REDBREAST. A bird of double passage; it has occurred at the end of April and in May, and from 24 September throughout October. We have never seen more than one or two in spring, but large numbers sometimes appear in autumn. Its habits are very different from those of the British Redbreast; we found it wild and skulking, taking covert in holes, under overhanging banks and among stones. The mortality among these migrants is very large; we have frequently picked them up dead after a big arrival, having apparently died of exhaustion or starvation, as they showed no signs of injury.

*Erithacus rubecula melophilus*. THE BRITISH REDBREAST. A bird of double passage; we have several records of it in May, up to the 20th, and it seems probable that some, at any rate, of the Redbreasts recorded in March and April belong to this subspecies. Small arrivals take place in August, these being probably *E. r. melophilus*, and this race occurs regularly in September. Occasionally Redbreasts visit the island in winter, but we have no proof as to whether they belong to this or the preceding subspecies.

\*\**Luscinia megarhyncha megarhyncha*. THE NIGHTINGALE. The only authenticated record for Scotland is of a male which arrived on the island on 9 May, 1911. It came with a light south-easterly wind, along with a rush of Warblers and other migrants.

*Cyanosylvia suecica suecica*. THE RED-SPOTTED BLUE-THROAT. Occurred in September, 1883, 1908, 1909, 1910, and 1913, and on 5 October, 1908, in which year a good many were present on the island. These birds were very wild when they first arrived, but became much tamer. The chestnut basal portion of the tail is a very striking feature in this bird; when about to alight Bluethroats fan out the tail, and this bright colour contrasts strongly with the dark brown terminal portion.

*Saxicola rubicola rubicola*. THE STONECHAT. Passage migrant in very small numbers; we have never seen more than one at a time, though we have seen them every autumn we have been on the island. In spring Stonechats have occurred in March, and in autumn between 11 September and 11 October.

\*\**Saxicola rubicola indica*. THE INDIAN STONECHAT. The first Scottish and second British record of this bird was of a young male procured on 10 October, 1913.

*Saxicola rubetra rubetra*. THE WHINCHAT. A bird of double passage, occurring from 25 April throughout May, reappearing about mid-August, the migration extending throughout September and the first week of October. It appears at times in considerable numbers.

*Œnanthe œnanthe œnanthe*. THE WHEATEAR. Formerly bred on the island, but now no longer does so, which is curious, as there are many suitable nesting-places. A bird of double passage, passing in spring between 21 March and 10 June, and in autumn between 6 July and mid-October, while stragglers have been seen up to 1 November. Wheatears sometimes appear in very large numbers, and many visit the lantern.

\**Œnanthe œnanthe leucorrhœa*. THE GREENLAND WHEATEAR. A bird of double passage, visiting the island in spring from 21 April to 31 May, and in autumn from 6 September to 24 October. In addition to its larger size and more vivid

colouring, this subspecies, in our opinion, differs from the typical form in its way of holding itself, and is more given to perching on elevated places, such as chimney-pots, roofs, and so on. We have frequently seen males displaying in spring; they crouched down, spread out and depressed their tails so that the white showed conspicuously, and uttered a peculiar sharp note, then lifted their wings stiffly and remained so for a moment. They also sang vigorously; their song seemed louder and wilder than that of the Common Wheatear.

\*\*\**Enanthe leucomela leucomela.* THE PIED WHEATEAR. A female in autumn plumage was procured by us on the Isle of May on 19 October, 1909. The wind had been from the east the previous day, but had returned to the west that morning. This specimen belonged to the white-throated variety, the *Saxicola vittata* of Hemprich & Ehrenberg. It was considerably darker than the Common Wheatear, looked slighter, and seemed to show less white on the rump and tail when it flew. It was restless and rather wild, fluttering from one rock to another in a hurried manner.

*Accentor modularis modularis.* THE HEDGE-SPARROW. Formerly bred on the island, but now is only a bird of passage and occasional winter visitor. Passes in spring between 2 March and 15 May, and in autumn between mid-September and mid-November.

*Cinclus cinclus britannicus.* THE BRITISH DIPPER. A bird of this race was shot on the island on 22 April, 1885, and Dippers recorded on 2 & 29 August and 8 December, 1884, may also have belonged to this subspecies.

*Troglodytes troglodytes troglodytes.* THE WREN. A bird of double passage and occasional winter visitor, occurring in spring from mid-April to mid-May, and in autumn from mid-September to mid-November.

*Muscicapa grisola grisola.* THE SPOTTED FLYCATCHER. Occurs at both migration seasons: spring movement takes place from 7th to end of May, and there is one record on

12 June, and in autumn from mid-August throughout September and occasionally to 16 October.

*Muscicapa atricapilla atricapilla.* THE PIED FLYCATCHER. Occurs on both spring and autumn passage, at the former season from 27 April to 22 May, at the latter from 9 August throughout September, and occasionally up to mid-October. This bird is strongly attracted by light, much more so than the preceding species.

\**Muscicapa parva parva.* THE RED-BREASTED FLYCATCHER. An uncommon visitor to the island: the records, all of single birds, are 25 September 1909, 28 September 1912, 1 October 1913, and 28 September 1916, all with easterly winds.

*Hirundo rustica rustica.* THE SWALLOW. A bird of double passage, occurring in spring from 18 April throughout May, and in autumn from mid-August to mid-October, and once on 4 November. Swallows migrate largely by day; we have seen them at both migration periods performing their daylight journeys.

*Delichon urbica urbica.* THE HOUSE-MARTIN. A bird of double passage; its spring movements are between 4th and end of May, its autumn chiefly in September. This and the preceding species are occasionally reported during summer, but these are probably birds over from the mainland.

*Riparia riparia riparia.* THE SAND-MARTIN. Passes in small numbers in spring and autumn; at the former season the only notes we have are between 2 & 29 May, at the latter between 18 July and 17 September.

*Dryobates major major.* THE NORTHERN GREAT SPOTTED WOODPECKER. On 16 September, 1909, a bird of the year visited the island. It fed on the ants in the grassy mounds, progressing with clumsy flight from one to the other.

*Iynx torquilla torquilla.* THE WRYNECK. An occasional visitor, single birds having been recorded in May, August, and September.

*Cuculus canorus canorus.* THE CUCKOO. A bird of double passage, occurring in spring from the end of April to early June, and in autumn from 10 July to 23 August, the later records being birds of the year.

*Micropus apus apus.* THE SWIFT. Passes in spring and autumn; at the former season from 3 May to early June, at the latter from the end of July to the beginning of September. Swifts migrate largely by day, but must also travel at night, as they are occasionally killed at the lantern.

*Caprimulgus europæus europæus.* THE NIGHTJAR. There are three records for the island, namely, on 22 September 1881, 2 June 1902, and 9 October 1913.

*Upupa epops epops.* THE HOOPOE. There are two records for the island, namely, on 30 April 1898, and 1-3 October 1910.

*Alcedo ispida ispida.* THE KINGFISHER. The only record for the island is of a bird killed at the lantern on 2/3 September 1914.

*Asio otus otus.* THE LONG-EARED OWL. An occasional visitor from September to November, and one was recorded on 26 July, 1915.

*Asio accipitrinus accipitrinus.* THE SHORT-EARED OWL. A bird of double passage: in March and April, and again from 24 September to early November. Quite a number visit the island some autumns.

*Buteo buteo buteo.* THE BUZZARD. On 22 October, 1913, we saw a bird of this species being chased by a Peregrine; they flew south over the island, the Falcon stooping at the Buzzard, which uttered wild mewling calls.

*Falco peregrinus peregrinus.* THE PEREGRINE. Used to breed on the cliffs, but now no longer does so. Frequently visits the island at all seasons.

*Falco æsalon æsalon.* THE MERLIN. Occurs regularly in September and October, and there are three spring records, one in March and two in May.

*Falco tinnunculus tinnunculus.* THE KESTREL. A passage migrant; in spring chiefly in April, though occasionally seen in March and May, and in autumn from August to November.

*Phalacrocorax carbo carbo.* THE CORMORANT. It is stated that a few pairs used to breed in a cave on the island, but Mr. Evans is of opinion that this species and the Shag have been confused. Cormorants, chiefly immature, frequent the island throughout the year.

*Phalacrocorax graculus graculus.* THE SHAG. A pair breed on the island, and Shags, mostly immature, may be seen there all the year round. In the evenings the Shags and Cormorants used to assemble on the west cliffs; there they soared in circles at varying heights, settling on the cliffs for a minute as they came round, and then flinging themselves off and circling again. These assemblies were larger and more animated when there was a strong west wind than at any other time, and we noticed that the flights were highest above the sea under these weather conditions, probably on account of the updraught off the cliffs.

*Sula bassana.* THE GANNET. Constantly seen passing, in some years as early as January and as late as November. Very occasionally one will settle on the island.

*Anser albifrons albifrons.* THE WHITE-FRONTED GOOSE. The only record for the island is of an immature bird on 27 October, 1913. "Grey Geese" are frequently recorded as passing in winter, but it is impossible to say to which species they belonged.

*Branta bernicla bernicla.* THE BRENT GOOSE. There are two records of this species in October.



*Branta leucopsis*. THE BARNACLE GOOSE. One is reported by Mr. McCuish as having been seen on the island on 31 March, 1908.

*Tadorna tadorna*. THE COMMON SHELDUCK. The only records are—two killed at the lantern on 22 September, 1898, and one seen off the North Ness on 4 May, 1913.

*Anas boschas boschas*. THE MALLARD. Seen frequently in the sea off the island.

*Querquedula crecca crecca*. THE TEAL. Fairly common in small numbers in September and October, and has also been recorded in January, March, April, and December.

*Mareca penelope*. THE WIGEON. Seen occasionally, chiefly in May, September, and October.

*Spatula clypeata*. THE SHOVELER. A male was sent us from off the island on 2 May, 1908.

*Nyroca ferina*. THE POCHARD. A female was seen on the loch by Mr. W. Evans on 4 August, 1911.

*Nyroca fuligula*. THE TUFTED DUCK. Five flew close overhead on 21 September, 1908.

*Clangula hyemalis*. THE LONG-TAILED DUCK. Seen fairly frequently about the island between October and April.

*Somateria mollissima mollissima*. THE EIDER. Breeds on the island, and may be seen in the seas around throughout the year. Its numbers are greatly increased in late September and October by arrivals, chiefly of full-plumaged males.

*Edemia nigra nigra*. THE COMMON SCOTER. Seen occasionally off the island in May, September, and October.

*Edemia fusca fusca*. THE VELVET SCOTER. Eight flew close past the island on 22 September, 1913.

**Mergus serrator.** THE RED-BREASTED MERGANSER. There are occasional records in July, September, October, and November.

**Ardea cinerea.** THE HERON. Occurs on the island at all seasons of the year.

**Scolopax rusticola.** THE WOODCOCK. A bird of double passage, more abundant in autumn than in spring, and an occasional winter visitor. In spring the movement is chiefly in March and April, with stragglers as late as 13 May, and in autumn from the end of September to mid-November, the period of maximum movement being the end of October and beginning of November.

**Gallinago gallinago gallinago.** THE SNIPE. A bird of double passage and occasional winter visitor. The periods of maximum movement are March, April, and up to 11 May and 3 September to mid-November. This species has never been seen on the island in any numbers.

**Limnocyptes gallinula.** THE JACK-SNIPE. A bird of double passage and fairly frequent winter visitor. Passage takes place in March and April, and from 22 September through October and November; it occurs in small numbers only.

**Tringa canutus.** THE KNOT. The records for the island are: 2 November 1900, two killed at the lantern; 7 November 1902, six killed at the lantern; 19/20 May 1912, "going north calling at night"; 21 September 1912, from 12 to 3 A.M. two killed at the lantern, one caught, and many heard passing going due south. The bird that was caught was kept for us till the morning, when we ringed and released it; it immediately flew away strongly on exactly the same line as that taken by the migrants the preceding night, passing rapidly out of sight calling as it flew.

*Tringa maritima maritima*. THE PURPLE SANDPIPER. A winter visitor to the island, arriving from 23 July to mid-August and leaving again in May, our latest date being 24 May.

*Tringa alpina alpina*. THE DUNLIN. Occurs in spring, apparently chiefly in May, and in autumn from mid-August to mid-October, always in small numbers.

*Tringa ferruginea*. THE CURLEW SANDPIPER. The only record is of one killed on 14 October, 1902.

*Machetes pugnax*. THE RUFF. The only specimen known on the island was procured on 5 May, 1885.

*Totanus totanus*. THE REDSHANK. A pair bred on the island in 1912. A winter visitor in small numbers and bird of double passage, movement being noted, at the lantern and elsewhere, from 23 March to 24 May and from 16 July to mid-October.

*Totanus hypoleucus*. THE COMMON SANDPIPER. A bird of double passage, occurring in very small numbers in May and August.

*Limosa limosa limosa*. THE BLACK-TAILED GODWIT. One was procured at the end of May 1902.

*Limosa lapponica lapponica*. THE BAR-TAILED GODWIT. The only record is of one seen by us flying just off the south end of the island on 24 September, 1910.

*Numenius arquata arquata*. THE CURLEW. Occurs on the island at all seasons of the year, but does not breed there. Decided passage-movement takes place in March and April, and again in August and September.

*Numenius phæopus phæopus*. THE WHIMBREL. A bird of double passage in very small numbers, being recorded in May and from the beginning of August up to 18 September.

*Charadrius apricarius*. THE GOLDEN PLOVER. A bird of double passage and an occasional winter visitor. Passage takes place chiefly in March and April, but overseas migrants have been observed as late as 23 May. In autumn this species is on the move from early September to early November.

*Ægialitis hiaticula*. THE RINGED PLOVER. An occasional visitor. Single birds are recorded on 15 & 16 May, 1914, and 14 July, 1910, and small numbers are noted on several occasions in August and September.

*Eudromias morinellus*. THE DOTTEREL. An occasional visitor. The species has been killed at the lantern and sent in, in May 1885 and August 1913 & 1914. In the last year Dotterel were unusually numerous, being at the lantern in numbers on 29/30 & 30/31 August and on the island during the daytime (S.E. & E. wind). It is interesting to note that this movement was also recorded at the Mull of Galloway lantern and at some of the Danish light-stations.

*Vanellus vanellus*. THE LAPWING. A bird of double passage and occasional winter visitor. The main spring movement takes place from mid-February to mid-April, but stragglers occur up to the end of May. In autumn small numbers are seen from August to November, but the migration is never as pronounced as it is in spring. Lapwings are often heard and seen in the rays of the lantern.

*Hæmatopus ostralegus ostralegus*. THE OYSTER-CATCHER. Two pairs breed on the island. There is little evidence of movement beyond a few notes of Oyster-catchers in the rays in February, May, and September.

*Arenaria interpres interpres*. THE TURNSTONE. Winter visitor, arriving about the third week of July and remaining up to the end of May.

*Larus canus canus.* THE COMMON GULL. Visits of this species to the island are recorded in May, September, and October.

*Larus argentatus argentatus.* THE HERRING-GULL. When we first went to the Isle of May in 1907 one pair of Herring-Gulls bred there, but they increased till in 1914 about a dozen pairs were nesting. Adults or young birds of this species frequent the May throughout the year.

*Larus marinus.* THE GREATER BLACK-BACKED GULL. Chiefly a winter visitor, but a few may be seen throughout the year.

*Larus fuscus affinis.* THE BRITISH LESSER BLACK-BACKED GULL. A bird of double passage, occurring chiefly in April and May and in September and October.

*Larus glaucus glaucus.* THE GLAUCOUS GULL. There are several records, chiefly of immature birds, in May and October.

*Larus ridibundus.* THE BLACK-HEADED GULL. There are frequent records of small numbers in March, May, September, and October.

*Larus minutus.* THE LITTLE GULL. The only record for the island is of an immature bird seen by us on 17 October, 1913.

*Rissa tridactyla tridactyla.* THE KITTIWAKE. A summer visitor to the island, breeding in numbers on the cliffs, which it first visits in March, leaving them again about mid-August. Flocks of Kittiwakes remain in the adjoining seas, where we used to see them till we left the island in late October. They are usually seen apparently feeding on shoals of fry along with Guillemots and Razorbills; when these latter come up from a dive the Kittiwakes stoop at them, frequently forcing them to dive again. There is a

record of a Kittiwake at the lantern on 14 November, 1884; otherwise we have no winter records.

*Sterna hirundo*. THE COMMON TERN. No Terns now breed on the island, but Common Terns are stated by Sir William Jardine to have bred there in former times. Common Terns are frequently seen passing or fishing off the island from May to September, and there are a good many records of Terns at the lantern or in the rays during the latter month.

*Sterna paradisæa*. THE ARCTIC TERN. This bird is stated by Macgillivray to have been formerly common on the May, and by Sir William Jardine to have bred there; but the only recent records of its occurrence there are of some passing or sitting on the rocks on 23 September, 1907, and 9 September, 1910.

*Sterna dougalli dougalli*. THE ROSEATE TERN. This Tern is stated by Sir William Jardine to have formerly bred on the island.

*Sterna minuta minuta*. THE LITTLE TERN. The only records are of several seen by Mr. Evans flying round the light on 8 September, 1913, and one or two on 1 August, 1915.

*Sterna sandvicensis sandvicensis*. THE SANDWICH TERN. Frequently seen passing in May, September, and early October. Is stated to have formerly bred on the island.

*Catharacta skua skua*. THE GREAT SKUA. Single birds were seen just off the island on 6 October, 1908, 14 July and 3 October, 1910.

*Stercorarius parasiticus*. THE ARCTIC SKUA. We have frequently seen birds of this species chasing the Gulls and Terns in May, September, and October. Skuas are supposed not to dive, but we once saw one do so. It had hunted a young Kittiwake till the latter had dropped a fish that it

was carrying ; this fell into the sea about twenty to thirty yards from where we were sitting. The Skua alighted on the water near its booty, pecked at it once or twice in a half-hearted manner, and then took no notice of it for a minute, during which time it sank. The Skua looked here and there for it, then slightly opening its wings, dived right under the water very neatly, stayed under for a moment, and then reappeared, but without the fish.

*Stercorarius pomarinus.* THE POMATORHINE SKUA. The only record for the island is of one which appeared there on 18 September, 1911.

*Alca torda.* THE RAZORBILL. A good many breed on the cliffs, to which they pay periodic visits from early February until they finally settle down in the end of April. They leave the cliffs again about mid-August, but remain in the surrounding seas throughout the winter. In October southward movements of this species are much in evidence to the east of the island.

*Uria troille troille.* THE GUILLEMOT. Many breed on the cliffs. The times of arrival and departure and their movements correspond with those of the Razorbill.

*Uria grylle grylle.* THE BLACK GUILLEMOT. Used to breed on the May, but has now apparently ceased to do so. We saw one, and once two, in the sea close to the island from 7-15 May, 1913, but could find no trace of their breeding. We have several times seen the species in October, and there are some isolated winter records.

*Alle alle.* THE LITTLE AUK. Occurs occasionally in the seas round the island, and is sometimes driven ashore, between 22 October and 27 February.

*Fratercula arctica arctica.* THE PUFFIN. Some breed on the island. They seem to arrive on the cliffs rather later than the Guillemots and Razorbills, but leave about the same period.

*Thalassidroma pelagica*. THE STORM PETREL. One was recorded on 5 June, 1916, and there are a good many records at the lantern in October and November.

*Oceanodroma leucorhoa*. LEACH'S PETREL. One was captured at the lantern on 6/7 October, 1908.

*Puffinus puffinus puffinus*. THE MANX SHEARWATER. Occurs in the Firth about the island in flocks from May to October, and has several times been taken at the lantern during that period.

*Puffinus griseus*. THE SOOTY SHEARWATER. We saw single birds flying about close to the island on 16 October, 1910, 4 October, 1911, and 20 October, 1913, while two appeared on 3 October, 1912.

*Fulmarus glacialis glacialis*. THE FULMAR. We twice saw a Fulmar close to the island in May 1914.

*Colymbus immer*. THE GREAT NORTHERN DIVER. Mr. Agnew records one on 19 December, 1882, Mr. Ross saw one close to the island about 1905, and Mr. W. Evans another on 3 February, 1912.

*Colymbus stellatus*. THE RED-THROATED DIVER. Mr. Agnew notes one on 20 January, 1882, and we saw one on 4 & 10 May, 1913.

*Podiceps auritus*. THE SLAVONIAN GREBE. A Grebe in winter plumage, probably this species, was seen by us just off the island on 24 & 28 October, 1909.

*Podiceps fluviatilis fluviatilis*. THE LITTLE GREBE. One was killed at the lantern on 22 March, 1909, and there are one or two records in September and October.

*Rallus aquaticus aquaticus*. THE WATER-RAIL. There are a good many records of single birds, chiefly at the lantern, in October and November.



*Crex crex.* THE CORNCRAKE. A bird of double passage, passing in spring in the end of April and May, and in autumn in August and September, while a late straggler occurred on 2 November, 1914.

*Gallinula chloropus chloropus.* THE MOORHEN. One was killed at the lantern on 2 April, 1908, and another found dead on 11 May of the same year. On 23 March, 1909, one appeared, and two were seen on the North Ness on 27 May, 1911.

*Fulica atra.* THE COOT. On 1 February, 1917, one arrived on the loch and remained about a fortnight.

*Columba oenas.* THE STOCK-DOVE. Single birds have been recorded at irregular intervals in May, September, and October.

*Columba palumbus palumbus.* THE WOOD-PIGEON. A bird of double passage and an occasional winter visitor. Spring movement is recorded from March to May, and autumn from September to November. In the eighties of last century much larger numbers are noted than now occur.

*Columba livia livia.* THE ROCK-PIGEON. Single birds are recorded in 1884 and 1885; and in 1911 Mr. W. Evans told us that a pair of Rock-Doves bred on the cliffs of the May in 1909, but he adds, "probably only the descendants of the dovecote pigeons that do duty as Rock-Doves on the Berwickshire coast."

*Streptopelia turtur turtur.* THE TURTLE-DOVE. There are a good many records in May and June, one in August, and one in September.

*Syrhaptes paradoxus.* PALLAS' SAND-GROUSE. The Isle of May participated in the great immigration of Sand-Grouse which took place in 1888, three being shot there on 30 May of that year.